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ABSTRACT

The Further Education Development Agency conducted two research studies of issues related to recording student attendance and responding to student absence. In the first study, absenteeism in five further education (FE) colleges in Britain was examined to determine the main causes of student absenteeism and administrative systems/procedures to address the problem. The second study evaluated the systems used to record student attendance at eight FE colleges representing a broad geographical, size, and structural mix. The findings of both studies were analyzed, and the following conclusions/recommendations were formulated: (1) although electronic systems of recording attendance can underpin FE colleges' response to absenteeism, such systems are still in an early stage of development and must therefore be used with caution; (2) FE managers must produce a comprehensive strategic plan for dealing with student absence; (3) if an electronic monitoring system is chosen to monitor attendance, all staff should be involved at the procurement stage, staff should be trained in using the system, and the system should be reviewed/evaluated continuously (including by obtaining input from teachers and students); and (4) FE colleges should review the causes of absence and establish clear statements on attendance policy for staff and students. (MN)

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Monitoring student attendance

Adjei Barwuah and Phill Walkley

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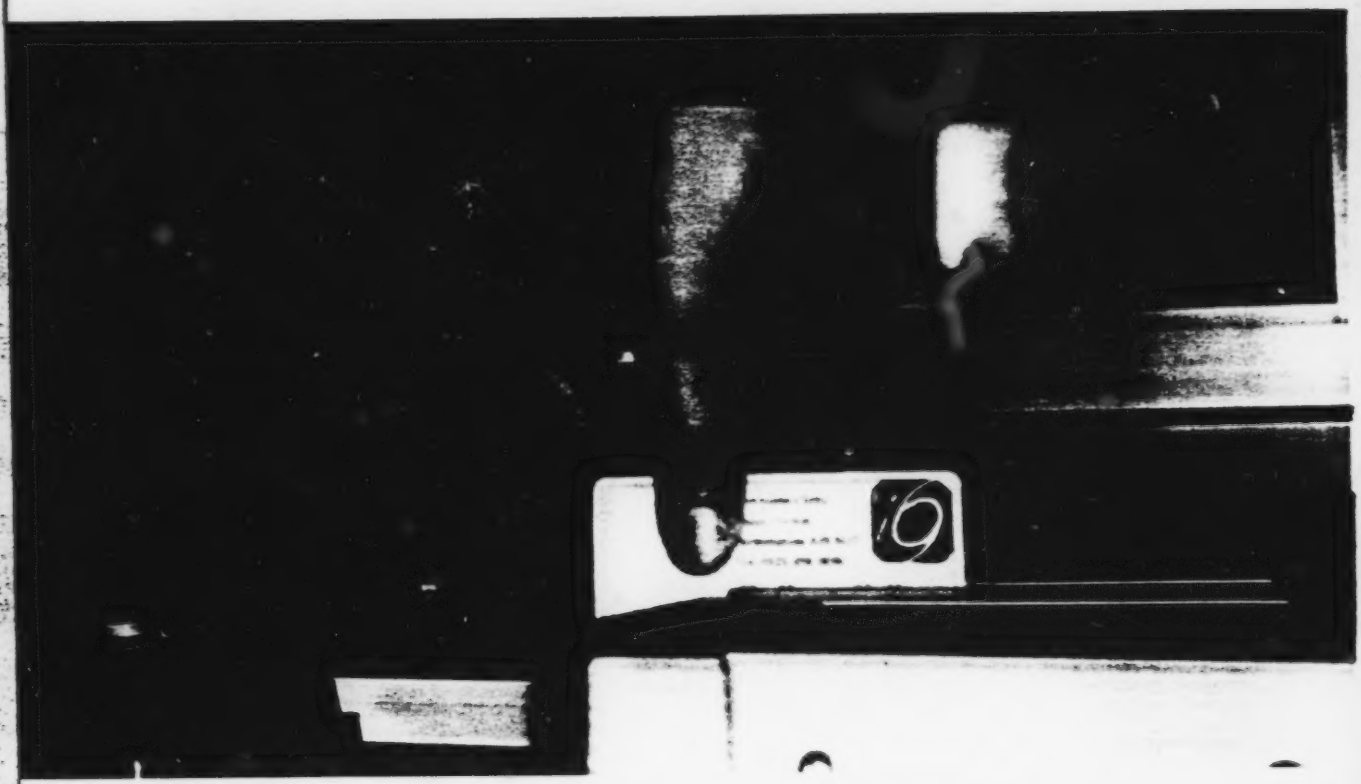

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Adjei Barwuah and Phill Walkley

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Contents

Overview 5

Research objectives

Strategic management

1. Why record attendance and follow up absence? 7

Reasons for recording attendance

Responding to absenteeism

Introducing an electronic system

2. Electronic systems 13

Register systems

Choosing an IT-based register system

Planning and policy

Suppliers and service

Relationship of register system to college-wide MIS

Use of data

Staff perception

Student perception

3. Conclusions and recommendations 27

Glossary 29

References and bibliography 30

Overview

Research objectives

The Further Education Development Agency (FEDA) has recently undertaken two research studies to explore issues around recording student attendance and responding to absence.

'Tackling absenteeism' involved analysing the situations in five different colleges to identify the main causes of student absenteeism, and through examining the administrative systems and procedures with which the colleges managed the problem to propose successful approaches. Each of the five participating colleges was visited to discuss the problem of absenteeism with relevant management staff and to gain insight into the monitoring systems and procedures in use. Three other colleges supplied documentary information.

In the second study, 'Evaluating systems of recording student attendance', eight colleges took part. These were selected to represent a wide geographical, size and structural mix. The aims of the project were to identify key considerations for colleges choosing a register system, provide a snapshot view of systems in use and to isolate factors that allow for successful implementation. Following a briefing session for participating colleges, one day was spent in each college observing the system in operation and discussing issues with a range of staff. Initial observations were circulated and discussed with college correspondents prior to a working day together in London to discuss issues that had arisen from the research and to examine final recommendations.

This report summarises the main findings of both of these studies. The first section looks at the issues behind absenteeism and possible responses. This is followed by a section on the different types of system in operation in the colleges participating in the second research study, which also sets out key considerations in establishing an effective attendance system to underpin other aspects of the college response.

Strategic management

All colleges should have an information systems strategy which is clearly linked to their mission statement and corporate plan. This should include clear and well worked out Management Information Systems (MIS) and register policies allied to adequate resourcing, clear expectation of outputs and training of staff and coherent thinking about why the college is embarking on a particular register system.

The register system is a key management tool without which it is extremely difficult to run the college efficiently and make timely and accurate responses to external agencies. Some colleges are already deriving powerful management information from analysis of their register data.

Early identification of absence and strategies to deal with this can prevent the students involved from having to drop out. Using patterns of absence to identify students 'at-risk' can alert management to the need to adjust the support services or its methods of curriculum delivery.

Because curriculum and other initiatives that challenge the conventional notions of attendance and absence (such as modularised programmes, non-tutored workshops and distance learning) are an increasing part of all students' timetables, systems for dealing with attendance and absence need to be regularly reviewed. The 'volunteer' status of learners in FE (particularly adults) also has to be borne in mind when systems are devised.

Reactions to absence by management, tutorial, pastoral and administrative staff must be co-ordinated before a response is made. Efficient administration based on electronic systems may be the best way to underpin this.

Types of systems

While paper systems are a means of capturing data, they do not allow for quick and easy analysis of the information.

Data capture into electronic systems can take many forms. The most common method is the use of clerks to enter data captured on forms.

The use of barcoding can speed up this method and reduce errors. The introduction of swipe cards or optical character/mark readers needs careful implementation and proper ongoing supervision.

Installing a swipe card system involves substantial initial investment. Ongoing monitoring is essential and success may depend on a major change of college culture, since the system passes ownership of registration from the lecturer to the student.

Ensuring staff commitment

Staff should be consulted from the beginning on decisions relating to the introduction and operation of a new system to ensure their continuous commitment. It is important that they have ownership of the system and understand its necessity and benefits, which must be realistic and achievable.

A powerful and college-wide communications network is a precondition for operating an effective register system. Once the system is up and running, the management should continually review its operation with the staff. To ensure that it is properly installed as the college's registration system, the old registers should not be held on to as an 'underground' alternative for staff.

Data collected must be seen to be used and unnecessary requests for information avoided. Staff should be offered relevant and practical training for sharing data.

Access

Register systems must be able to interface directly with the college's MIS. Standalone or 'one-way' systems will not speedily deliver the information needed.

All staff should be able to access analysed data at the level appropriate to their needs. Paper reporting should be an interim solution on the way to full on-line accessibility.

Procurement

Software and system suppliers must deliver what they claim to offer. Any system without an active user group represents an implementation risk. During procurement a college should request from the supplier a list of all currently installed systems and then select random sites for visits.

Computerised register systems will save money but this should be regarded as a long-term aim. Adequate resources must be available at the implementation and settling-in stages.

1. Why record attendance and follow up absence?

Retention of enrolled learners is a key objective for all colleges. There are sound practical, financial and ethical reasons for this. Other studies (for example, *Student retention — case studies of strategies that work*, FEDA, 1996) demonstrate that colleges successful at retaining students have adopted a many-faceted strategy to achieve this. Features of a successful retention strategy include quality in a number of key areas, notably induction and student support, as well as a positive, constructive and supportive college culture. Another area of importance for retention is having systems to record, monitor and support students as they move through college (see *Student tracking*, FEDA, 1996). Key among these are systems to record attendance and respond to absence.

While recording absence does not prevent it, a failure to do so is a serious weakness. It is remarkable how little common ground there is on this subject among colleges and how underutilised are electronic systems to support the monitoring of attendance and absence.

Reasons for recording attendance

Recording attendance is not an option but a legal requirement. It is also essential for providing crucial management information on which decisions about budgeting and planning can be based and it provides early warning about the failure of either a course or a student.

It is linked to funding mechanisms (if a student is absent for four weeks the Further Education Funding Council (FEFC) considers them to have withdrawn and funding is withheld) and is a key element in pastoral care as well as a main indicator of the quality of advice, guidance and counselling services. Absence may be the first symptom of a variety of problems for a student which could include personal and financial problems as well as difficulties with the course.

Recording attendance also relates to security issues: the absenteeism project, carried out in the first research study, revealed one case in which a new swipe card system was explained to parents and students entirely in terms of security. Finally, recording attendance connects with an important marketing issue: the ability of colleges to retain students and limit absenteeism.

Why monitor attendance?

Once attendance data has been recorded it can be used to monitor patterns of absenteeism. Colleges participating in this research reported that absenteeism has been a problem for about ten years. It is considered a problem because it:

- correlates highly with under-achievement and unsuccessful completion of studies
- can be a precursor to non-completion, and thus have an impact on retention
- can serve as an index of student dissatisfaction with the college provision or with the guidance and support
- is expensive to follow up (in terms of time and other resources)
- hampers students' efforts to attain qualifications

Colleges need to find out the reasons behind the student's absenteeism. These could range from:

- personal problems (such as domestic responsibilities, personal crises)
- problems with a course of study (such as assignment deadlines, difficulties in adjusting to self-directed learning or particular teaching styles)
- financial problems (such as paying for childcare, exam fees or equipment)
- transport problems (to college, or between college sites)
- support problems (such as lack of familiarity with or access to guidance or support services, or lack of a crèche)

Lateness and absence

A college needs to establish a standard approach to distinguishing between absence and lateness. Here is how two of the colleges defined absence:

> *'Failure to attend a taught session which is part of a student's agreed learning programme.'*

> *'Non-attendance at any timetabled and registered class contact session as a result of any form of inability to attend that session, including forgetfulness.'*

Among the participating colleges there was a lack of corporate policies on lateness and guidelines on when attendance should be recorded in the course of a class session.

> *'The college has no guidelines on when attendance may be registered; it is a function left to the discretion of individual tutors.'*

The decision about when attendance is to be recorded is often left to the subject tutor. One college reported that attendance is usually recorded within the first 15 to 30 minutes of the class, and even this is subject to the discretion of the subject tutor or the faculty responsible. Another college reports, however, that attendance is manually recorded at the beginning of each session. Consequently, any action on lateness is varied and dependent on the views of either subject teachers or faculty course teams. This means that lateness may or may not be recorded in registers and that any formal response to lateness may be a function of the historical differences in management styles between colleges or between faculties within the same college.

Responding to absenteeism

The responses triggered by student absence are very varied across the sector. The summaries that follow illustrate this and also indicate the varying levels of development of a strategy on absenteeism among the participating colleges.

College 1

Interim and permanent procedures regarding absenteeism, lateness and non-performance are in the process of being designed. These will include standard letters aimed at students not attending classes or frequently coming to class late. The emphasis will be on clearer rules and shorter, faster procedures.

College 2

Initial action: This tends to be aimed at getting the student back to the college to explore possibilities of resolving any problems, especially since the problems might be 'personal'. Initially, a tutor speaks to the student to ascertain the reasons for absence.

Subsequent action: This varies and could be a telephone call, a request for written explanation, and so on. Action may be dependent upon course requirements or faculty ethos. If reasons for absence are found to be personal, students are referred to student counsellors; if they are problems requiring learning support, they are referred to learning centres. In the case of adults whose problems may be more varied and complex, a review and re-evaluation of learner agreements and learning programmes may be advisable. The college is looking at trends in absence and devising monitoring procedures.

Disciplinary action: There are no college-wide sanctions for dealing with absence and the procedures of individual faculties are often influenced by their awareness of the problem.

College 3

There is as yet no college-wide system for dealing with absence. Individual departments take various actions to get students back to class. The current proposal is to devise a letter to go to absentees. The action may vary between college centres. On one site it is referred to a student adviser in the first instance, especially if the cause of absence is known or suspected. Disciplinary action is considered if absence has a direct bearing on academic performance or if it affects eligibility for a particular qualification.

College 4

Students are expected to give written explanation for their absence. After three absences, lecturers are expected to inform the student's personal tutor, who in turn may bring the problem to the notice of parents. The college's efforts are aimed at bringing the student back on to the course and also to provide an opportunity for reviewing the student's needs, such as counselling, learning or financial support. In extreme cases, daily monitoring of students may be undertaken. The college has introduced three initiatives to reduce absence:

- Absence Monitoring Scheme: daily input into the computer on student attendance and weekly reports to individual students' pastoral tutors
- Alarm Report: flagging up students who have been absent for at least three days or students with a regular pattern of absence for the past four months
- targeting attention on the most vulnerable areas of the curriculum, for example, GCSE, A levels

College 5

Initial action: three days' non-attendance triggers the following:

- a telephone call or a departmental letter from the course lecturer to the student
- the course lecturer completes a form instructing the course administrator to contact the student; this action is taken in all instances except where a student sends notification of absence before class or before contact is made by the lecturer or course administrator

College actions are meant to:

- highlight the importance of attendance to the student
- discover the reasons for non-attendance
- establish a date for the student's return
- enable the college to send work to the student if appropriate

Subsequent action: Where contact is made, the college provides student support in the form of counselling and guidance.

Disciplinary action: Any disciplinary action is at the discretion of lecturers and personal tutors. Students are, however, made aware of the academic and financial implications of inadequate attendance.

College 6

Initial action: For full-time students, a report is made to course tutors for follow-up action on second or third absence; for part-time students, the report goes to the Director of Study. College actions are meant to support students to enable them to obtain qualifications. In the case of 16-19 year olds, this may mean enlisting parental assistance and co-operation in providing a disciplined structure of learning and attendance for students.

Subsequent action: This action whether it be, for example, of a counselling, review or guidance nature, will depend upon the merits of individual cases.

Disciplinary action: Warnings are used only for full-time 16-19 year olds. The college has been making greater efforts to follow up absence of part-time students in order to reduce drop-out rates and to give appropriate support to students in difficulty. Suspension, exclusion and expulsion are not options the college exercises.

College 7

Initial action: The lecturer completes a standard form which is sent home to the student and copied to the senior tutor and the student's tutor. The lecturer may also phone the student. Ideally, this happens after the second absence, but not all lecturers are very conscientious about it.

Subsequent action: The tutor may contact the student and also put him/her 'on log' until attendance improves.

Disciplinary action: If a log is issued the student may have an interview with the senior tutor and a formal warning may be issued. As a last resort, a student may be asked to leave.

College 8

Initial action: Tutors meet students individually to find out what their problems might be. Students are then referred, if necessary, to student advisers, especially if absence is related to health, drugs or finance. This action has been found not to be frequent enough and could be improved upon. If students are on day release, an immediate report is sent to the sponsoring organisation. Students who are 16 and older are expected to phone in on the day of absence.

Subsequent action: After four weeks of absence, letters are sent to students from course teams. At this point a student is presumed to have left unless he/she gives good reasons to the contrary. There is an academic disciplinary procedure in place that could be applied. Some students have their studies terminated. Other action includes:

- organising support from peers for academic purposes
- course team review and self-assessment to improve quality assurance

Disciplinary action: Verbal then first and second written warnings are issued. As far as possible suspension, exclusion and expulsion are not resorted to except where a student is involved in illegal activity.

Individual action

Dealing with absence is not just an administrative challenge. When reasons for absence include many financial and personal factors, college responses must be carefully tailored to meet the needs of each individual case, including a tutorial and pastoral response.

If the college does not have an agreed framework on all three stages — initial action, subsequent action and disciplinary action — then lecturers and tutors are carrying major responsibility without adequate support. Moreover, the students may experience different practices in different courses, which can be confusing at best, and at worst, insufficiently responsive to their needs as well as undermining of tutors' efforts.

An electronic register system instantly overcomes the problem of how to monitor attendance at untutored activities

Introducing an electronic system

All of the considerations outlined above as to why recording attendance is important (see page 7) have meant that methods of recording attendance have been the subject of greater and greater attention. Expanding numbers, modularised programmes and activity in open learning centres have all changed the nature of the issues in recent years, as has the FEFC's own audit requirements. The FEFC, in its circular 94/29, defined withdrawal as when:

> *'the student has not attended classes for at least four continuous weeks, excluding holidays, unless there is auditable evidence of an intention to return.'*

As a result, colleges have been seeking more effective ways of capturing attendance data and responding to it.

Many paper-based systems (marking registers) can capture data moderately effectively but responding to such data can be difficult and analysis lengthy, with the results often out of date by the time they are ready.

All of the colleges in the study of absenteeism used a system which requires attendance to be recorded on paper registers by subject lecturers during each session; electronic systems (swipe cards) were confined to recording attendance at libraries and other open learning centres.

Some colleges had no mechanism for recording attendance for activities held outside of college:

> *'The current system of operation does not allow for registration of attendance to be done outside formal class sessions.'*

Many colleges have responded to the problem of recording attendance at untutored activity by using electronic means and this has been the testing ground for much of the early development of electronic systems for colleges.

These systems offer the potential to collate data instantaneously and often to provide instant analysis. They also remove the need for a standard approach on distinguishing between lateness and absenteeism since they record actual registration time, so lateness is automatically noted. This is important information since records of punctuality are a key factor in assessing students, particularly for the service sector. However, while they are gradually replacing the paper-based systems they are still relatively new to the sector.

Before selecting which electronic system to use it is essential to undertake a thorough needs analysis based on clear objectives. This should be followed by a systematic procurement policy to include trial periods, visits to other working sites to observe systems under consideration and ensuring access to user groups. It is also vital that consultation takes place with staff and students prior to setting objectives and procuring the new system.

Setting objectives

Key purposes of an attendance system can be to:

- provide management information for forward planning
- monitor course viability
- provide early warning of student problems
- provide auditable evidence
- improve site security
- improve room and resource utilisation

All of these purposes, and more, can be met by a fully-developed electronic system. Such systems, if properly used, can provide instant daily analysis of attendance, including trends over time.

However, a number of factors need to be addressed before decisions on systems are made. These include:

- method of registration to be used (electronic and other)
- issues surrounding the development of a card system
- links between sites

- links between registration system and college-wide MIS
- resources available for purchase and maintenance of the system
- introducing proposals to both the staff and the students
- managing the change-over to the new system
- allowing for evaluation and review following a trial period
- management of the system and links with senior management

In the second part of the research, different systems were observed in practice in the participating colleges. Their experiences, reported on in the section that follows, illustrate some of the ways in which to address these issues. At the present stage of development and for commercial reasons it is not possible to recommend a particular system. However, the experiences of these colleges should help to give a clear idea of requirements from a system, and ways to achieve successful implementation and future operation.

2. Electronic systems

Register systems

A selection of different systems was observed in operation in the second research study. These were the FEMIS Registration Module, the SIRS software (operating with swipe card and EARS data collection), the Compass proprietary system, the Microcompass Register Module (within College 2000) and the COVTECH system. (See the glossary on page 29 for an explanation of these system terms.)

All of these systems collect data which is capable of being analysed; the main differences are in the quality of analysis (which depends upon the reliability of the data) and methods of data capture.

Outlined below, are the systems used by each of the eight participating colleges.

Compass

The college operating Compass, a PC-based MIS, had installed it to replace the COVTECH registration system. Compass is currently operating in only about 20 sites across the country. Some problems have occurred in that previous FEMIS data cannot be accessed: only current second year information was transferred on to Compass.

The data capture system was similar to that found in several project colleges which use clerk-input of information:

- registers are brought in from four sites into a central inputting unit
- daily registers are distributed to the staff workrooms and to the departmental staffrooms
- clerks input manually into a register file

At the time of the visit, the college was experiencing difficulties using the system to collect and process register data. At this stage, nothing is loaded into student files. Also, speed of data input is slower than COVTECH and the system is unable to keep up with the speed of keying. No timetable information is held on MIS so no cross-checking is possible on the staff submitting the registers. Only manual checks are possible, and these are delegated to schools of study.

Also, there is no record of the registers which are in use. Coded registers are issued to schools of study but only those handed in for data input are logged on MIS. Theoretically, a lecture could run all year and if a register is never handed in, no record of it would exist outside the school.

The system has:

- a register file (made up of all those registers received centrally)
- an entry file (for each time the register is taken)
- an attendance file (each student name has a 52-character entry line)

There is also a file containing one record per student per event. With the vast amount of data this entails it is small wonder that the system runs slowly.

Reports on attendance are produced only on request from staff. Nothing is sent to parents about attendance so no regular print-outs go to tutors and there is no on-line access. Under COVTECH there had been tutor group reports but, as the college stated, under Compass:

'present reporting facilities are not up to it.'

Some use is made of percentaged attendances for parents' evenings.

Some Open Learning/Access facilities on three of the four sites have swipe card readers, but these are not used for tracking. This is a consequence of the initiative being curriculum not management-led. Also, the data collected is not really usable, since the swiping system is not monitored or disciplined.

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COVTECH

One of the participating colleges had been operating the COVTECH register system successfully since 1990. Paper registers are issued by schools of study and numbered from a number allocation given by central MIS. Registers cannot run unless they are linked to a related programme in the main MIS programme database. Data is keyed into the system because this seemed more reliable than other forms of data entry. Originally this input was centralised; now it is devolved to nine schools of study each of which has two administrative assistants familiar with the system.

The college also has a swipe card system for Library/Open Learning facilities. There are considerable problems getting clean enough data from this system. There are also problems with optical readers. Data from the two systems is therefore kept separate.

Microcompass

In June 1995, the principal and MIS staff in this college introduced the newly-adopted Microcompass system to all heads of school. In late August, an instructional pack was issued to all staff and, as part of the September induction, all schools were addressed by the principal and the MIS manager.

Temporary registers were issued to staff through schools of study with lists of students printed out from the enrolment database (including student number codes and their dates of birth). Temporary registers have a theoretical life of ten weeks, by which time the groups are expected to have settled. Staff are told that the temporary registers are auditable documents.

Permanent registers are created at the end of the 'settle-in' period and student codes are keyed into the register system. Cover information and attendance data from the temporary registers is transferred to the permanent registers. All of the registers are preprinted with term and holiday periods. Any unit/module changes for the same group of students is recorded by placing a new information label on the register (the same paper register can continue to be used). This avoids multiplicity of registers when coping with modularised programmes.

Currently attendances are keyed in, but the college intends to move to barcoded registers (student codes and lecture information) to be read quickly by pen-shaped barcode readers by assistant principals' secretaries.

In the first year of operation, the central unit has had difficulty in organising all of the permanent registers and, in places, temporary ones are still in use. However, this could be due to insufficient staffing levels.

EARS

The EARS system was one of the most advanced systems studied and, despite operational difficulties, was the only one which is fully electronic.

In the participating college which operates it, each lecturer is issued with a keypad which communicates with the main PC through 22 radio transmission units installed at different points across the college, thus allowing direct communication (in theory two-way) between the lecturer and the central database. Keypads are solid and resilient: battery-powered with about eight months' life on a set of rechargeable long-life batteries.

Staff key in their personal code, class code and lesson code. The system then downloads all student names in the group on to a LCD screen attached to a keyboard (four names maximum at a time). The lecturer can then scroll down, entering the appropriate attendance code. The data is transmitted to a central PC for analysis.

FEMIS

The FEMIS Registration module was in use in one participating college with OMR, giving the capacity to handle 250 registers in two hours. However, in the college visited there was an inaccuracy rate of 20 per cent of the registers. In the college at which it was observed, FEMIS was operating without a wide college network and only eight user licences were in operation.

OMR

In one college in the study optical mark reading (OMR) had failed to cope with the volume. On first sight it appears to be an efficient way of reading registers and avoiding the apparent tedium of clerk entry of attendances and absences. However, all of the participating colleges believed OMR to be a generator of excessive paper, so it may be a solution better suited to smaller scale FE institutions.

Swipe card

The two swipe card sites visited were still in the developmental stage and were not yet producing 'validated' data capable of analysis.

In one of these colleges, 56 swipe card readers were linked to a central PC creating a very large raw datafile. Access to 12 locked specialist rooms was similarly controlled.

In the other college, electronic registration was to be the second stage of a project which had thus far achieved control of external access to college buildings and internal access to two learning centres, a computer room and the library. Students' swipe cards acquired an ID/Admin. number from the SIMS student record. Again, all card readers were connected to a PC. Access to all rooms can be controlled through 'timed' and 'dated' cards.

One of the other participating colleges gave complete commitment to a swipe card registration system, only to later discontinue it. In summer 1990 the entire college site was wired with readers and through 1990-1991 a pilot scheme ran on six courses. This was reasonably effective, mainly because everyone knew it was a pilot and so staff and students were vigilant about working it.

Full implementation was introduced in 1991. However, since this was a response to a need for careful monitoring following financial difficulty it was not a strategically planned process.

The swipe system was relatively primitive: 'dumb' readers which simply displayed a red light when a swipe was done. Cards were very basic. Lecturers had to swipe two cards to identify themselves and the module or class they were teaching. Students were required to make a single swipe.

In the year 1991-2 the system 'limped'. Student cards did not arrive in time for the start of term and thereafter there were problems with card distribution. Temporary paper registers had to be issued. Students also forgot cards so that a manual 'yellow' card system had to be introduced where attendances were in theory inputted from cards handed in later. Lecturers had no display to tell them which students had or had not swiped. If a lecturer forgot to swipe

A swipe card system passes the responsibility of registration from the lecturer to the student

the module card, the software had to search the database to achieve a match on those students who had swiped. If an 80 per cent correlation was achieved, attendances were credited to that register; if not, the system automatically created a new register. As a result, by the end of the year some classes had dozens of registers!

Manual registers were in use as a back up during the second year of operation, 1992-3. By the middle of that year, the system software was working to the standard required. However, the operational problems described above, and particularly the tendency of students to neglect to swipe, led to the decision to abandon swiping and return to manual registers from September 1993. The only students who could be relied on to swipe were those who saw some interest in doing so, particularly those whose employers required evidence that they had attended.

From an electronic standpoint, 'swiping' is of interest but even in the college with most experience (among the two current users), 20 per cent of students were not yet swiping and the problem of 'tailgating' (students allowing fellows in on their swipe) was as yet unresolved. However, the evidence is not conclusive, and swipe card methods are likely to develop to a satisfactory level. Colleges outside of this study have reported very satisfactory use already.

Data entry methods

Designated clerks keying in information from paper forms was the most common means of data entry experienced.

The colleges involved had achieved a very high level of speed and accuracy. The main issue was whether it was better to devolve 'punching' to a number of faculty or department clerks to share the load or whether to keep the task centralised. Two colleges in the study went different ways here but were each working effective systems.

The issue of boredom for punching clerks was creatively overcome in one college by assigning the clerks a number of 'front-end' staff liaison roles and also by involving the clerks in innovation and project work.

Other register systems

Other data capture ideas not seen by the project which could be worthy of investigation include:

- barcoding registers and student details, with information being read by a pen-shaped barcode reader
- a 'memory pen' used by lecturers to read barcodes printed on paper registers, with the data stored in the pen being collected overnight electronically from workroom storage points
- PC-based systems similar to those used by commercial sales teams with overnight collection and download of data via the college network
- a 'smartcard' carried by all students incorporating a chip which would transmit data to receiving points within the college — a sort of electronic tagging system

Key messages

- On the basis of this study it is not yet possible to fully recommend any one electronic system. Much depends upon the quality of management and operation of the system used.
- Collection of data ought to be a relatively easy process though it is clear from this project that there are a number of characteristic operational problems; nevertheless, the key attention area in selecting a system must be the output/reporting aspects.
- No clear consensus on data capture emerged. OMR and swipe card systems seemed to have been implemented most successfully in the smaller colleges, within the sample studied for this research. Inputting of data worked best when those responsible had varying and enhanced roles.

Choosing an IT-based register system

Before choosing a system, colleges need to consider how much they wish the responsibility of registration to rest with the students, who are after all increasingly in charge of their own learning, or whether they want the system to continue to be staff-centred.

In some instances management decision-making seems to have been based on the premise that 'we should have a modern system' without fully comprehending why. In one college, the drive for computerised registration (achieved through a swipe card system) arose from a general commitment to IT: arguably the college could have continued with paper registers perfectly happily. Full cost-benefit analysis, as with any major development, should always be undertaken.

The pastoral motivation was the most obvious reason for adopting an IT-based register system. Colleges want to convince the 'market' that they can look after students as well as sixth forms. One college certainly felt this competitive pressure from schools claiming a better record for tracking students and threatening to reopen sixth forms.

Colleges with a problem of non-attendance or with low retention rates needed a method of early warning as well as one which would assess accurately the scale of the problem. In one college, however, it had been important to remind people that the FEMIS registration system would not *solve* the question of non-attendance, but would give information on the incidence and scale of the problem which would assist in tackling it.

In another college the exponential growth in student numbers (from 100 to 1300 in 12 years) made paper systems unwieldy and, in the same college, the swipe system allowed access control which improved security. This example illustrates a main justification for IT development: to be able to handle large volumes of data without access to a small army of administrative staff.

In three of the participating colleges, a sound management reason was present: the use of registers to generate management information with which the college could be run effectively and efficiently. In one of the colleges using the COVTECH system, it was the principal's desire to manage staff, rather than know more about the students, which led to the introduction of this system. Another college running COVTECH uses register data to produce a weekly digest of individual lecturer activity with which that individual has to agree or investigate any discrepancy. In another, savings running into hundreds of thousands of pounds as a result of more 'tailored' planning of timetables shows the value of accurate, speedy and up-to-date data.

Several colleges base the payment of part-time salaries on register data. This is achieved either by requiring that lecturers' salary claims be validated by register data or by using the college finance module to generate the lecturer's claim form, initiated by the MIS attendance module outputting 'event' information and attendance figures.

One Training and Enterprise Council (TEC), already paying a college on complete NVQs intends to pay on element achievement in 1996-7 making detailed student tracking vital. The college uses the register data as the key snapshot of student activity.

Not all of the colleges studied use the register data as a management tool. For example, one stated when their system was installed that:

> *'reporting was not initially a high priority';*

indeed, reports could only be produced at the software supplier's head office because there was no facility in the college itself.

The choice of system will often reflect the college's philosophy. One college, with a commitment to swipe cards, was engineering a complete culture change by shifting the responsibility of registration to the student, in step, as they saw it, with student-centred curricula. By contrast the EARS pads in another college were deliberately chosen to reflect the

'traditional' approach to lecturer-led registration, replacing paper by a plastic keyboard. In contrast, another college recoiled from the prospect of allowing all 900 of its staff access to a system where queries can only be made through update mode so that if the enquirer escapes before the end of a record, default facilities can amend data automatically! This was clearly a shortcoming of software design and needs to be rectified.

Behind all developments, but not always acknowledged, is the FEFC/FEFCW insistence on audit and proven effectiveness. A college without an effective means of tracking student attendance and responding to this information will find its position difficult to justify.

Key message

- Registers can be the key management tool in a college. However useful as a pastoral or marketing tool, these functions are eclipsed by the power of register information to provide a daily snapshot of all the most important college activities.

Planning and policy

Not only does the introduction of a new register system need to be carefully planned, its ongoing management also needs to be prepared for, and then regularly reviewed. Among the colleges taking part in the research there was a range of approaches to planning on view, varying in degrees of success.

Coherence of forward planning

There was some exemplary practice in forward planning. One college had a clearly worked out whole-college MIS strategy in place by 1992. In another, the 'home' of a well-established MIS, the needs of management for accurate data led to well worked out procedures and protocols available in handbook form and on the IT network. In another college a new principal brought with him a set of clear and well thought out development strategies which, most importantly, he was determined to share with staff. A sizeable sixth form college decided to allocate its FEFC capital grant to a two-stage access control and swipe card registration system implemented carefully throughout an academic year. A smaller sixth form college had not only written its own management software but was deriving obvious benefit from membership of the National Council for Educational Technology (NCET).

There were some negative examples too.

In one college, internal politics had determined the choice of a whole college MIS that was clearly proving unequal to the task of managing such a large organisation. In another, a system chosen on poorly researched grounds and installed in a rush "to meet the beginning of the autumn term" resulted in a poor start in terms of reliability and caused some loss of staff confidence. Even when the register system was developed as part of the overall MIS approach, as in one college, different sites were allowed to interpret it differently.

In more than one example, cohorts of students remain outside of the main system (adult evening classes especially, but also classes of less than ten weeks and those in outcentres).

The approach to staff consultation prior to buying a system varied among the colleges from one where senior management did not consult staff at all, to others where college-wide consultation took place on what staff needed for support. One college held at least one meeting a term for all staff involved with IT issues; another had allowed its MIS review team to lapse. One college's information systems central unit had set itself tough parameters for performance which were regularly reviewed and the results published.

During the period of transferring between systems it is necessary to check whether both manual and electronic registers are needed as key auditable documents.

Project management

Good leadership and careful introduction of the system to the staff proved to be one of the keys to success in colleges with effective systems.

The colleges which achieved successful technical development of the systems did so using a different human resource method than the rest: a fully empowered MIS manager with direct access to the principal; a vice-principal who leads development; an assistant principal with a vision of a student-led registration system; an information systems manager and a sympathetic director of learning resources, both with considerable skills and/or experience of IT; a complete senior management team sharing a desire to use MIS to run the college; and in the most economically staffed example, an IT teacher with remission to supervise the system but with considerable personal dedication.

Adequate resources

Staffing needs were sometimes underestimated and college managers had an over-simplistic belief in the ability of an automated register system to save money. In one college this was combined with a decision to allow the IT advisory committee to lapse, so that after four years discussions still take place on whether to continue the register system. Proper development of MIS demands extra staffing: the principal of one college expressed the view forcibly that the more he does with MIS, the more work is created and the more staff needed, at least initially, though he concedes savings will be made in the long term. In one of the smaller colleges there was an admirable policy of matching development to the resources available, even if this meant very slow progress. This contrasts with the college which purchased software (and became a 'test and reference site' for that company) but could not spare the resources to send key staff on training courses offered by the software house!

In terms of direct staffing, experiences varied across the project. In one college, the head of IT ran the swipe card system on some remitted teaching time, with college receptionists handling card problems (it was acknowledged that this would have to change when electronic registration was fully implemented). This contrasts with the college where five full-time programmers grapple with an apparently failing MIS which was not yet producing management information, assisted by 12 IT technicians, a full-time inputting clerk, four half day and one three-quarter day clerks, plus an administrative/information manager in each of the teaching schools.

A number of the colleges had exemplary MIS managers, with varying numbers of support staff but all with clear and businesslike links to senior management.

One other college displayed good practice in its central Information Systems Unit which was run by five staff under an information services manager: a data systems officer, a technical systems assistant and three clerks/data inputters. Policy is supervised by the Director of Learning Resources. The systems and especially the procedures — which are available on-line through the college IT network to act as the basis for administrative activity — revealed considerable commitment to clarity and an 'open' approach to IT. The unit is committed to ongoing staff development; for example, the inputting clerks are trained in system development and in report writing. Clerks are encouraged to deal direct with lecturers whose registers had problems and also with staff who needed help or information.

The system appears to perform extremely well. Central MIS carries out its own performance monitoring, producing error analyses which even at their peak are below 3.5 per cent.

Induction and training

For a register system to be effective it is not just necessary that those running the system are completely at home with it: all lecturing staff need to understand it and be committed to its use as well. This raises internal issues of 'selling' the system to staff, and providing effective induction and training.

Three colleges were committed to allowing all staff on-line access to the system. All three had training programmes in place on how to operate the system, often using a workshop approach. A number of colleges had well-written handbooks and procedure documents.

One small sixth form college devoted an annual all-staff training day to using the system. Most had initial training from system suppliers which in some cases was effectively cascaded to other staff. However, one college said it:

'couldn't afford the supplier training'

so its staff had only the manuals to work from. In some cases initial staff demonstrations of systems did little more than arouse expectation.

One small college stated the admirable precept that its system would not be implemented until staff were ready and the software proven:

'Why waste energy enforcing the unenforcable?'

In at least three of the project colleges the staff were certainly ready, taking pride in the quality of the information produced from a registration system in which they had confidence.

Ownership

Staff ownership of a register system is one of the keys to its success, but many colleges fail to give this the commitment it requires. For example, one of the participating colleges suspended use of the register system while the individual student record (ISR) was being completed, with the explanation that:

'Staff were being diverted to more important tasks.'

In another college, staff were instructed to compile paper generated statistics at the end of a year in which they had been told expressly not to keep paper registers. Maintaining staff confidence in the system is vital. This latter instance pushed staff confidence in the register system to its nadir and the consequences in terms of morale were clear.

By contrast there were at least three colleges where the staff clearly owned the system and the data it produced. If staff understand the importance of the register system, they are more likely to give it the commitment it requires and hence share in the benefits of its use.

Key messages

- Management must have a clear implementation policy before introducing any IT system — attendance systems are no exception.
- System managers must be empowered with a direct link to the principal.
- System managers must have quality people and organisational skills and be effective communicators.
- Register systems, in common with all MIS, need considerable resourcing. They may save a great deal of money in the long term but they cannot do this if their development is stifled by inadequate training and staffing levels.
- Staffing does not have to be lavish provided the right management skills and clarity of practice is in place.
- Lecturers need to be kept involved at all stages of register system development.
- Review of the system is critical: it must be proven to be attaining its performance objectives. An internal users' group is a good approach.
- Non-technical staff should ideally be allowed access to the system: this encourages ownership by giving positive feedback in terms of usable data. Good programmes should allow read-only access where necessary. If programmes can be tailored to personalise access this will improve user-friendliness.

Suppliers and service

Every college should have an appropriate procurement policy in place if they are to avoid the undesirable consequences of a lack of understanding of IT common among the managers responsible for selecting the register system.

The colleges in this project illustrated just some of these consequences: the college which took on the responsibility of being used as a live test site by a software supplier almost had to abandon the register system after two terms; one supplier installed a hard disk with a capacity (150Mb) that was too small for even the modest size of the college — after a difficult first year of operation it eventually upgraded it to 250Mb. Staff at the same college were led to expect an electronic mail system as part of the package, only to find it was an extra.

The experience of this project suggests a procurement policy should include:

- a design brief
- detailed specifications from more than one supplier
- a full dialogue with the prospective supplier informed by specialist advice on both sides
- carefully written contracts

This research showed that support to colleges was variable. Again this should be secured at the time of the original contract. The test site college, referred to earlier, had seen little response to the requests and suggestions it had made over a three year period even though it still remains a reference site for potential customers of the software company! Its main suggestion — a direct link between attendance recording and the ISR — seems eminently reasonable. Another college preferred to design its own software developments based on the software provided, while another refined its software use to overcome unreliability difficulties it had experienced with the original system.

Some system user groups were lively and productive. In some cases thrice yearly meetings at host colleges were common practice, with polls of users to agree changes, and working parties to monitor national developments. Two systems had so few colleges on line that their suppliers did not consider user groups viable, in spite of the considerable presence of both of the systems in the schools sector.

Both swipe card colleges encountered considerable problems with reliability of the system. One had difficulties in developing the cards, due to poor card production software. Delays could have seriously damaged the credibility of the system, had the college not prevented this via successful communication with staff, students and parents. The other college experienced a high failure rate on cards and this was due to poor project management. Manuals and software updates arrived late and poor training and preparation led to register design errors.

From this research it appears that software suppliers need to pay far more attention to initial analysis of the colleges' needs and to their own post-sales responsibilities.

However, responsibility for these problems must also be shared by colleges: piloting, acceptance testing, clarity about after-sales service, on-site help and tailoring the service to their individual needs should all be insisted on before any contracts are signed.

Key message

- Software suppliers need to analyse customer needs better. College managers need to consult the market prior to procurement and ensure proficient after-sales service.

Relationship of register system to college-wide MIS

Colleges which input the time and effort involved in fully integrating their register system with their existing MIS will reap many benefits. However, very few of the colleges taking part in this research showed commitment to integration.

In one college there was no relationship between the register system and college-wide MIS: though the register system was theoretically a module of the comprehensive college management system, there appeared to be neither downloading nor transfer of data from the 'punched-in' student attendance data. A great deal of effort and resource went into the collection of register data but little seemed to be done with it.

More commonly, register systems accepted 'one-way' information on students downloaded from the enrolment record. On several occasions examples were given of the register system being corrupted by updates of the enrolment record, errors which subsequently took several months to eradicate. Responsibility for systems integration needs to be clearly allocated with a change control procedure in place so that changes are not introduced to one sub-system without thought to others.

The well-established FEMIS register module has, as yet, no link between the student record and the attendance module, despite requests from users. This is promised as a facility in EMIS's new product *Portfolio* which is currently being developed.

Three colleges enjoyed well-developed MIS where attendance, student data and other college modules were fully integrated: one college uses the personnel record to check the issue and return of registers; in another, data from different files is used for cross-verification.

One college runs COVTECH software for enrolments, student records and the course file. All databases use common reference codes (course code and student enrolment number). The central MIS unit does full enrolments (with a special rapid enrolment on-line by school staff but using codings strictly controlled by the central unit). There is, however, a great deal of cross-verification of information and chasing of invalid room, lecturer or student codes. The course file is managed on-line by the deputy principal. As attendance information is directly linked to the student record file and all other databases, a very sophisticated and wide-ranging analysis of college performance is possible. The register data is regarded as the key point of information on what is actually happening in the college.

Network issues

One college was committing £150,000 to the development of a college-wide IT network, over an admittedly difficult site, and similar commitments had been made at other colleges. The network must be powerful enough to cope with both the data collection requirements and access to analysis.

Access to data

The purpose of collecting register data is to report on it, yet this has not been a high priority in all cases. College managements have sometimes missed the significance of reporting; in one college there are no regular reports at all, only those requested by individual staff.

Participating colleges suggested that user-friendliness could be improved even in some of the better known packages. Staff should not have to seek assistance from IT experts in order to access information.

Paper reports were available in many colleges on a regular basis for use as part of the tutorial process. One college typically produces from its FEMIS/OMR registers a weekly print-out of student absences going to all tutors, with a percentage cumulative attendance report every fortnight. A percentage attendance per term per subject is then produced on each student. Faculty heads receive half-termly summary subject attendance figures which are passed to all relevant staff, including part-time course leaders. In some cases there were log-jams of

report production and a possible excess of reports produced automatically. Another college had abandoned all automatic paper reports for this reason.

Most systems came with a number of standard reports as well as the facility to generate college specific ones. One college had a policy that all reports should be written in-house, to answer the specific needs of staff, and it even intended to make report generation part of staff training. Systems should include easy-to-use, point and click report writing facilities capable of including all data fields in any combination.

On-line access to reports was the aim in three of the larger colleges, with user-friendly front-end menus generated by the lecturer's individual access code. Circulation of different levels of data in this way raises issues of validation and confidentiality. Accepting this, some of the more 'advanced' MIS colleges believed that confidence in the quality of data bred openness, and vice versa. While lecturers' ability to amend information raised issues of validity, read-only access to carefully tailored reports seemed a reasonable and progressive approach.

In one college, reports and specific data on attendance were freely available to all staff through their access codes. There is a long list of pre-defined reports with any special reports done to order by the central unit. Staff are encouraged to access information on-line. Three years' data is held live on the system. Enquiry menus are simple to follow. Reports can be printed locally across the college. The policy is not to produce paper reports. This open approach to information reflects the confidence the central unit had in the quality of the data they hold on the system.

In another college there is a one-key call up of data analysis, for example, active/withdrawn/transferred students; lists of students in teaching groups, start date, percentage attendance. Problem students can be selected and full information on them displayed on-screen. All this amounts to an impressive ability to access information. The reporting software was written largely by one person after listening to staff information needs.

A further college is in the process of opening up its student record to give on-line access to all staff. Staff codes will generate menus relevant to themselves. The current system will have a Windows front-end, to be more user-friendly for staff. The system offers fast and detailed reporting on screen. Details on attendance patterns can be accessed by group or through the ISR. There is a diary on each student file showing pattern of activity over the term. The system was derived from tertiary college experience and thus holds a great deal of detail on each student, accessible in one place.

Key messages

- Standalone register systems which do not relate to the main college MIS are a false economy. In the current climate of increasing information, colleges need either a fully integrated, modular information system or a properly integrated separate system.
- On-line access for lecturers via systems where the individual's access code generates relevant menus is the model for the future.
- Investment in college-wide communications infrastructure (local and wide area networks) is essential for every college. This provides the foundation for implementation of IS and IT strategies and systems, including attendance recording systems.

Use of data

Many colleges, though not all, make good use of reports for student tutorial purposes. In a small number of the colleges, information from registers is used to produce sophisticated and detailed analysis of college daily performance.

One college uses registers as a management tool. Some impressive analysis has been achieved leading to a culture change. Staff utilisation is carefully monitored and salaries of part-time staff paid only from registers. This has led to substantial savings in the first year of

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operation alone. Room utilisation is the next area for development. Student information and control is another key feature of its data use. Centrally issued printed reports have now ceased: information is only available on line to school of study offices. Some staff have good on-line skills and training is available to widen this. Staff access to source data is limited to about 20 users because of the dangers of corruption of data and the possible slowing of the system through excessive user access.

In another college, where the COVTECH system was introduced principally to manage staff rather than monitor students, an impressive range of management reports is produced. All of these stem from the attendance system which is the daily, if not hourly, snapshot of college activity (including room utilisation). The weekly digest on each lecturer's teaching — with which the lecturer has to agree or refer any discrepancies to the central unit for investigation — is not just a check on the lecturer, but a means of verifying and updating the data on the system, especially the registers.

This college operates a Quality Survey System (rather like a mini FEFC inspection) where each school of study's performance is checked against a standard set of indicators. The MIS provides the data for this, and it is in the interest of every head of school to ensure this is correct.

In another college, students apparently withdrawn from the register, or whose absence is noted by inputters, are notified for checking and possible withdrawal. A non-attendance report covering a four week period is provided at the end of the first term.

Key message

- It is wasteful to install a register system and then not put the collected data to full use — a purely pastoral use ignores the power to review wider college activity which register systems offer.

Staff perception

The smoothness and efficiency with which a system is introduced will have a great bearing on the staff's perception of its usefulness.

In one college there was a major crisis of confidence. Lack of belief in the system had meant staff had hung on to paper registering despite instructions. Statistics promised from the system and electronic messaging had not materialised. Difficulties here seem to have been a consequence of poor specifications, company support and training. This was a classic example of how poor preparation and haphazard implementation can damage staff confidence in the system. However, the most important missing ingredient was firm support and commitment from senior managers.

Staff confidence, understanding and support are vital for any register system to work and management has to encourage that state of affairs. For example, asking staff (as they see it) to do things twice (such as produce additional manual statistics), is likely to provoke opposition and doubt.

One college has a new principal and new MIS manager who want to change the culture of the college as regards information, but who have an approach of involvement and gradual introduction which is likely to work. A traditional staff force will have to be brought along gently. A range of meetings across the management of the college is a mouthpiece for 'moans'. However, general response has been positive. Staff are beginning to understand the system and are encouraged to air their views. The system is reviewed and staff are debriefed. For example, the funding methodology had just been explained to the heads of school to engender a sharing of responsibility.

In one college, where students are acquainted with using swipe cards but where the discipline of swiping is not strictly enforced, it will be the ability of staff to write their own reports and use the information generated by the electronic register system which will encourage staff to enforce the system.

In another, a bad experience with a swipe card system united the staff behind what they saw as a more conventional system, engendering a positive response to using it. Staff are given data which is useful, and reports are shared and owned by the whole college. The paper registers they maintain, once input into the system by clerks, allow detailed analysis of lecturer and student performance. To help achieve maximum benefit from this the management has ensured that staff know the basis of current funding methodologies and the resulting importance of accurate and timely information.

Key message

- Without staff confidence and understanding any register system will fail. Lecturing staff have to understand how the system works and appreciate the benefits which will accrue to themselves and to the college.

Student perception

Most college students in this study experienced registration as something done 'to them', with the exception of one which was giving students the responsibility of registration. There was general acceptance among students that evidence collected will be used as part of the pastoral process and plenty of annoyance when that evidence was not accurate. Swipe cards were seen as part of the 'grown up' aspect of college life, as were ID cards. There was some feeling (perhaps gained from disgruntled lecturers) that managements were prepared to spend a lot of resource on gimmicks without ensuring they worked.

Key message

- Attendance is a key element in student success so it is important that ownership of registration is shared by the students and seen as an integral part of the learning process.

3. Conclusions and recommendations

An electronic system of recording attendance can underpin a college's response to absenteeism. However, caution needs to be exercised:

- electronic systems are still in an early stage of development
- considerable care has to be exercised in choosing and implementing them
- electronic systems and reports from them are only the beginnings of a response to absence

In responding to absence, management needs to recognise the nature of the problem and:

- produce a comprehensive strategic plan for dealing with absence
- explore a variety of solutions

Strategic planning should include:

- a description of the problem
- consideration of administrative, pastoral and management responses
- careful exploration of the variety of appropriate administrative responses
- full financial analysis including both cost benefit analysis and projected running costs

If an electronic system is chosen, there should be:

- careful exploration of possible solutions including site visits to see the systems in operation and access to user groups
- involvement of all staff at the procurement stage
- attention to after-sales issues such as maintenance, customisation to a college's requirements and helplines
- appropriate induction and continuing training for staff at implementation stage and beyond
- consultation with students at implementation stage
- continued review and evaluation of the system including responses from staff and student users

Establishing a policy on absence should include:

- a review of causes of absence including financial difficulty, personal circumstances (such as illness and childcare problems), poor quality in curriculum delivery, and poor guidance and information
- a clear statement on attendance policy for staff and students including explanation of the need for regular attendance, sources of help and support, and the system for recording and responding to attendance and absence

Appropriate responses to the causes of absence are difficult to achieve and may include the mobilisation of all aspects of college support and attention to quality assurance for all aspects of provision.

Once the strategy and policy are established and new systems are introduced it is important to ensure the full potential is realised by:

- exploiting all reporting possibilities from the system
- co-ordinating responses to system reports before action is taken
- building up information over time including trends and patterns of absence

Glossary

Barcode

A machine readable arrangement of numbers and parallel lines which can be electronically scanned in order to read and/or update associated information stored on a computer.

Compass
A college management system including student records and finance modules. Originally supplied by Commercell Ltd, now supported by INS Ltd. (There is no relationship with the company Microcompass, listed below.)

COVTECH
Covtech Systems Ltd, known as a supplier of student tracking systems including register systems, has been taken over by Dolphin Computer Services Ltd. They supply a complete suite of management information products known as Systems Intuition. The former COVTECH modules have been rereleased as part of this product set.

EARS
Electronic Attendance Registration System: supplied by Bromcom Computers plc, this system allows tutors to register students' attendance using a small hand-held computer. This uses radio communication to transfer this data directly to a central computer system, and to achieve this requires receiver units to be installed in a network around the college.

E-mail
Electronic mail: use of computer networks to transmit messages and data.

FEMIS
Further Education Management Information System: supplied by EMIS Ltd.

ID
Abbreviation of 'identification'.

ISR
Individualised Student Record: the Further Education Funding Council (FEFC) requires ISR returns to be made three times a year to provide it with data about students enrolled at colleges in the FE sector (and students funded by FEFC in external institutions).

LCD
Liquid Crystal Display: a flat screen commonly used in watches, clocks, calculators and hand-held computers.

Mb
Abbreviation of 'megabyte', a measurement of the capacity of computer memory or data storage media. A byte is a contiguous group of eight bits (a bit is the basic unit of data processing, a single binary digit, 0 or 1). A kilobyte is 1024 bytes and a megabyte is 1024 kilobytes or 1048576 bytes.

Microcompass Systems
Microcompass Systems Ltd supply College 2000, an integrated suite of college information management systems.

MIS
Management Information Systems: in further education, MIS is commonly used to mean any computerised administration system and the department responsible for these.

OMR
Optical Mark Reader: a device enabling letters, numbers or other characters, usually printed on paper, to be optically scanned and input to a computer. (Also the process these devices use: Optical Character Recognition.)

SIMS
Suppliers of SIMS computer systems for schools and colleges.

SIRS
Student Integrated Registration System.

Smartcard
A plastic card with an embedded computer chip which can store and process information. Sometimes called intelligent cards, they can be used to allow access to secure systems or facilities.

Swipe
To pass a plastic card through a machine that electronically interprets the information encoded on it.

Swipe card
These plastic cards, encoded with information about the user, are used to gain and record access to locations or services, for example, recording classroom attendance or use of open learning centres.

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